DOCUMENT RESUME

ED 096 390 CE 001 870

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|---|---|
| TITLE | Introduction to Computer Programming--Basic, Data Processing Technology: 8025.15. |
| INSTITUTION | Dade County Public Schools, Miami, Fla. |
| PUB DATE | 73 |
| NOTE | 13p.; An Authorized Course of Instruction for the Quinmester Program |
| EDRS PRICE | MF-$0.75 HC-$1.50 PLUS POSTAGE |
| DESCRIPTORS | Business Education; Business Skills; Computer Science Education; Computer Storage Devices; Course Content; Course Objectives; Curriculum Guides; *Data Processing; Programing; Secondary Grades |
| IDENTIFIERS | Binary Arithmetic; Florida; *Quinmester Program |

ABSTRACT

Outlined in this pamphlet are basic activities to teach students flowcharting techniques, logic principles, machine description, various memory storage devices, binary arithmetic, and input/output devices. Data processing principles are reviewed. The course objective is to prepare students for advanced courses in data processing. Course goals, specific block objectives (orientation, review of data processing fundamentals, introduction to computers, and a posttest), and a posttest sample are included with a brief bibliography. (NH)

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# AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

DADE COUNTY PUBLIC SCHOOLS

Course Outline
DATA PROCESSING TECHNOLOGY - 8025
(Introduction to Computer Programming - Basic)
Department 73 - Quin 8025.15
8120.05 (old)

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DIVISION OF INSTRUCTION • 1973

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Course Outline

# DATA PROCESSING TECHNOLOGY - 8025
## (Introduction to Computer Programming - Basic)

Department 73 - Quin 8025.15
8120.05 (old)

county office of

VOCATIONAL AND ADULT EDUCATION

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Dr. E. L. Whigham, Superintendent of Schools
Dade County Public Schools
Miami, Florida 33132

March, 1973

Published by the School Board of Dade County

## Course Description

| 8025 | 73 | 8025.15 | Introduction to Computer Programming - Intermediate |
|---|---|---|---|
| State Category Number | County Dept. Number | County Course Number | Course Title |

Data processing principles are reviewed. The student then learns flowcharting techniques, logic principles, machine description, various memory/storage devices, binary arithmetic, and input/output devices.

Indicators of Success: The skills and knowledge obtained from Keypunch and Verifier (8025.11), Sorter and Advanced Keypunch (8025.12), Collator Operation (8025.13), and Unit Record Equipment (8025.14) are a must before this course can be taken.

Clock Hours: 45

# PREFACE

The following quinmester course outline is a guide for the instructor to present to students the basic programming concepts that will prepare the student for the advanced courses in data processing. This elective course is designed for the 10th, 11th or 12th grade student.

The skills and knowledge obtained from "Keypunch and Verifier" (8025.11), "Sorter and Advanced Keypunch" (8025.12), "Collator Operation" (8025.13), and "Unit Record Equipment" (8025.14) are a must before this course can be taken.

The first week of the course provides a short review of data processing principles. The following eight weeks the student will learn flowcharting techniques, logic principles, machine description, various memory/storage devices, binary arithmetic and input/output devices.

In presenting the material outlined in this course, the instructor uses lectures, presentations, student participation, demonstration, and student projects as methods of instruction.

The class meets one hour per day for 45 clock hours. This outline consists of four blocks of instruction which are subdivided into several units each.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown


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| Familiarizing the Student with School Regulations and Course Objectives | 1 |
| Regulations in the Use of Equipment and Materials | 1 |
| II. REVIEW OF DATA PROCESSING FUNDAMENTALS (2 Hours) | |
| Principles of Punched Card Accounting | 1 |
| Applications of Punched Card Machines | 1 |
| III. INTRODUCTION TO COMPUTERS (40 Hours) | |
| Evaluation of Computers | 1 |
| Basic Elements of the Computer | 1 |
| Communication with the Computer | 1 |
| Computer Flowcharting | 1 |
| Our Computer System | 2 |
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| IV. QUINMESTER POST-TEST (2 Hours) | |
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## GOALS

The student must be able to demonstrate:

1. Knowledge of the punched card, applications, and punched card accounting.
2. Understanding of the relationship between unit record equipment and the computer.
3. The ability to flowchart the logical solution to basic problems.
4. Understanding of the functions of a computer system.

## SPECIFIC BLOCK OBJECTIVES

### BLOCK I - ORIENTATION

The student must be able to:

1. Explain orally or in writing what is expected of him as a student in this introductory course.
2. Explain the proper use of equipment and materials.

### BLOCK II - REVIEW OF DATA PROCESSING FUNDAMENTALS

The student must be able to:

1. Explain the principles of punched card accounting.
2. Describe the applications of punched card machines.

### BLOCK III - INTRODUCTION TO COMPUTERS

The student must be able to:

1. Discuss the background of computers.
2. Describe the basic elements of a computer system.
3. Explain how we communicate with the computer.
4. Exhibit the ability to flowchart.
5. Describe the computer system that will be used in the classroom.
6. Explain the instruction format.
7. Describe memory allocation.
8. Flowchart and code basic problems.

### BLOCK IV - QUINMESTER POST-TEST

The student must be able to:

1. Satisfactorily complete the quinmester post-test.

Course Outline

DATA PROCESSING TECHNOLOGY - 8025
(Introduction to Computer Programming - Basic)

Department 73 - Quin 8025.15
8120.05 (old)

I. ORIENTATION

A. Familiarizing the Student with School Regulations and Course Objectives
   1. School policy rules and facilities of the school
   2. Objectives and requirements of the course
   3. Methods and techniques of presenting instruction

B. Regulations in the Use of Equipment and Materials
   1. Safety practice in the use of equipment
   2. Care of equipment and materials
   3. Classroom procedures and cleanliness of work area

II. REVIEW OF DATA PROCESSING FUNDAMENTALS

A. Principles of Punched Card Accounting
   1. The punch card
   2. Coding data
   3. Machine processing

B. Applications of Punched Card Machines
   1. Business
   2. Scientific
   3. Military

III. INTRODUCTION TO COMPUTERS

A. Evaluation of Computers
   1. History
   2. Need

B. Basic Elements of the Computer
   1. Input
   2. Storage
   3. Arithmetic
   4. Control
   5. Output

C. Communication with the Computer
   1. Numbering systems
   2. Computer language fundamentals and usage

D. Computer Flowcharting
   1. Use of symbols
   2. General systems flowcharting
   3. Detail flowcharting

E. Our Computer System
   1. Central processor
   2. Peripheral equipment

F. Instruction Format
   1. Machine language
   2. Symbolic

G. Storage Organization
   1. Memory layout
   2. Addressing scheme

H. Sample Problems
   1. Flowcharts developed by instructor and students
   2. Coding of problem
   3. Test programs and debug if computer available

IV. QUINMESTER POST-TEST

BIBLIOGRAPHY
(Introduction to Computer Programming)

Basic References:


1. Burroughs 100-200-300 Component Operation Manual. Form 1023868. Detroit: Burroughs Corporation, 1967. n.p.

2. Burroughs 100-200-300 Equipment Reference Manual. Form 1023850. Detroit: Burroughs Corporation, 1966. n.p.

3. Haga, Enoch. Understanding Automation. Elmhurst: The Business Press, 1965. Pp. 437.

4. McCracken, Weiss, Lee. Programming Business Computers. New York: Wiley, John, and Sons, Inc., 1959. Pp. 510.

5. Flowcharting Standards for Information Processing. Form 97-05-001. Camden, New Jersey: Radio Corporation of America, 1966. n.p.

# A P P E N D I X

## Quinmester Post-Test Sample

Quinmester Post-Test

Flowchart and code the following:

1. Read cards.
2. Card column 8 and 9 has a transaction code:
   a. If code is equal to 01, print the account number and the amount.
   b. If code is equal to 31, reproduce the card.
   c. Pass all other cards.
3. At END OF FILE, HALT 99.
4. Card format is shown below.

| 1-7 | 89 | 10-19 | 20-80 |
|---|---|---|---|
| Account # | tx | Amount | misc. |